

Assessing the knowledge on the management of dental avulsion among parents in Riyadh (2020)

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ABSTRACT

Objective: This study aims to evaluate the parents' awareness and attitude toward managing dental avulsion in Riyadh city. **Materials and Methods:** An electronic questionnaire survey form was designed. It contains three parts; the first part consists of demographic data, the second aims to assess the level of knowledge regarding dental avulsion, and the third part consists of simulated case scenarios that have been sent to parents using social media (WhatsApp, Twitter, and Snapchat) randomly in Riyadh city. One thousand nine hundred forty-nine questionnaires were collected and analyzed using the JMP program. **Results:** Majority of the participants are females. Most of the participants are aware of the difference in the type of knocked-out teeth, whether it is primary or permanent. 58% of participants knows how to manage a knocked-out tooth correctly. More than 50 per cent of the participants appreciate that it is urgent to seek a dentist immediately. **Conclusion:** This study shows that most parents who have participated have an intermediate level of knowledge in dental trauma. According to the results of this study, having previous knowledge in dental trauma management and the source of that information plays a significant role in improving parental knowledge. The level of knowledge of the parents affects the prognosis of avulsed teeth. Management of the knocked-out teeth immediately will affect the prognosis positively.

Keywords: Dental trauma, Dental avulsion, Awareness, Parents' knowledge

1. INTRODUCTION

Traumatic Dental Injuries (TDI) refers to trauma affecting the dentoalveolar complex and adjacent soft tissues such as the lips, tongue, and oral mucosa (Bruggesser et al., 2020; Alsawaji et al., 2020). In some situations, TDI might be unnoticed or unmanaged, leading to changes in the affected tooth and developing teeth causing changes in tooth color, location, or shape (Andreasen et al., 2007). TDI represents 5% of all traumatic injuries (Petti et al., 2018) and the most encountered type was dental fractures in general (76.6%),



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followed by luxation injuries, then avulsion of primary teeth and finally avulsion of permanent teeth, which represents 0.5-3% of all TDI (Bruggesser et al., 2020). Dental avulsion is a severe type of injury, and the prognosis depends mainly on the management carried at the place of incident and immediately after the avulsion. Replantation, in most cases, is the best treatment option. However, it is not always possible, especially in cases with other head and neck injuries requiring more urgent management or in cases of medically compromised or severely uncooperative patients. Replantation and immediate dental management can successfully save the avulsed tooth; even if it is saved temporarily in the alveolar bone until the child reaches an age where fixed replacements can be considered (after completion of growth). It is crucial to consider that some of these teeth have lower chances of survival (short and long-term) and could be lost or extracted later. Missing anterior teeth due to dental avulsion can significantly impact the child physically and psychologically; hence, proper immediate management is required for this type of injury. Studies regarding the knowledge and awareness on the management of dental avulsion in children have been done for many years. It targeted different groups, including parents, teachers, sports coaches, professional medical and dental members, or even the children themselves. These studies have been done at different geographic locations, such as India, Jordan, Saudi Arabia, the United Arab Emirates, and the United Kingdom. Different questions were asked in these studies aiming to assess the level of knowledge among the target groups in managing dental avulsion. Other variables also have been studied because they may affect knowledge. Our focus was on the studies that studied parental knowledge.

2. METHODOLOGY

This cross-sectional study has been performed through an online questionnaire using “google forms” to assess parental knowledge on the management of dental avulsion. The survey has been randomly distributed through social media platforms –Twitter, Snapchat, and WhatsApp- from the 8th to 31st of September 2020. A convenience sampling was carried out for a minimum sample size of 385, which has been calculated using the following formula $Proportion (p) = 0.50$, $Error (d) = 0.05$, $Alpha (\alpha) = 0.05$, $Z (0.975) = 1.959964$ Sample size (n) = 385. Ethical approval for the study was obtained from King Abdullah International Medical Research Center (KAIMRC) – IRBC/1945/20. The study has included parents using social media and living in Riyadh. The questionnaire (Table 1) was designed and modified from questionnaires used in earlier studies. It was prepared in both English and Arabic languages. A pilot test was applied on 15 participants who did not participate in the final analysis to assess the reliability and validity of the questions. The objectives of the study were explained alongside the consent to participate in the study. The questionnaire contains three parts; part I contains questions related to demographic data to find any significant relationship between these variables and the level of knowledge. Part II contains general information questions related to the knocked-out tooth to assess the parents' level of knowledge regarding tooth avulsion. Part III contains questions related to scenarios that are related to the avulsed tooth. Finally, after survey completion, a brief informative video about immediate and appropriate steps for managing tooth avulsion has been displayed for the participants. The data obtained from the questionnaires were entered into JMP (statistical software) and analyzed at a significance level of less than 0.05 ($P < 0.05$). The Chi-square test has been used to measures how expectations compare to actual observed data (or model results).

3. RESULTS

One thousand nine hundred forty-nine participants have responded to this questionnaire; their demographic characteristics were presented in Table 1 & figure 1. The majority of the participants are females (87%), and the primary age group is between 20 to 29 years (36%).

Table 1 Baseline characteristics of participants

Gender	Male	250	12.83
	female	1699	87.17
Age	20 to 29	697	35.76
	30 to 39	510	26.17
	40 to 49	492	25.24
	50 or above	250	12.83
	Uneducated	14	0.72
	Primary School	10	0.51

Educational Level	Intermediate School	47	2.41
	High School	408	20.93
	Bachelor's Degree	1222	62.71
	Higher Education	248	12.72
Marital Status	Married	1809	92.82
	Divorced	85	4.36
	Widow/widower	55	2.82
Number of Children	1	461	23.66
	2	406	20.83
	3	301	15.44
	More than 3	781	40.07
Occupation	Employed	1105	56.69
	Unemployed	844	43.30

63% of the participants have a bachelor's degree followed by a high school certificate, respectively). The majority of the participants are married (93%), employed (57%), and with more than three children (40%). Table 2 shows responses to questions that investigate previous information or experience of dental injuries and attitudes toward further learning on the management of knocked-out teeth. 74% participants have had previous information on dental injuries and their management, and the primary sources of information were either from a dentist/physician (44%) or from the internet (29%). (79%) participants have experienced/witnessed a dental trauma, and 66% of participants are interested in further learning the management of knocked-out teeth.

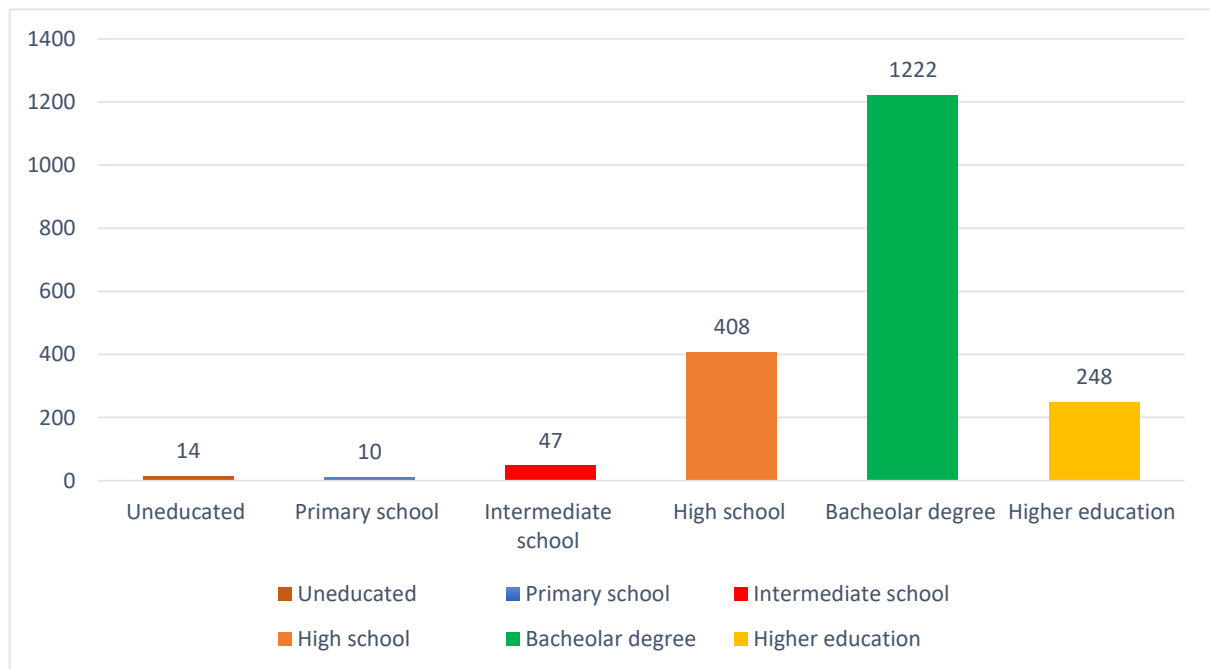


Figure 1 Educational level

Table 2 Questions related to previous information/experience of dental trauma and attitude toward further learning

VARIABLE	CATEGORY	No.	%
Previous Information about dental injuries?	Yes	1450	74.39
	No	499	25.6
	Internet	423	29.17
	Books	45	3.10
	Training courses	30	2.07

Source of information	Television	37	2.55
	Dentist/physician	645	44.48
	Friends	161	11.10
	Others	109	7.53
Experienced or witnessed a dental trauma?	Yes	1536	78.81
	No	413	21.19
Interested in learning about management of knocked-out teeth?	Very interested	1283	65.83
	Neutral	581	29.81
	Not interested	85	4.36

The responses to an imaginary case assessing the basic knowledge on the immediate management of dental avulsion are presented in Table 3. Most of the participants are aware that there is a difference in whether the knocked-out tooth was primary or permanent (80%), and 93% selected the correct place to seek immediate management by visiting the dental clinic. 43% of participants have the correct knowledge that the upper incisor on a 10-year old child is a permanent tooth, and 44% would hold it from the crown. 58% of participants would manage knocked-out tooth correctly by either rinsing and putting the tooth back in its place or saving it in a storage medium, then take the child to the dentist immediately. The majority of participants (54%) would use tap water without rubbing for rinsing the knocked-out tooth. Regarding the storage medium, the top answer was to save the tooth in tissue paper (22%), followed by normal saline (21%) then milk (18%). More than half of the participants are aware that it is urgent to seek the emergency department either immediately or within 60 minutes. Based on the total score of the participants on the questions presented in Table 3, the majority (53%) have an intermediate level of knowledge.

Table 3 Basic knowledge on the immediate management of dental avulsion

VARIABLE	CATEGORY	No.	%
Is there a difference whether the knocked-out tooth is primary or permanent	Yes	1560	80.04
	No	49	2.51
	I don't know	340	17.45
First place to take the child to?	General hospital	203	10.42
	Dental clinic	1600	82.09
	I don't know	146	7.49
The knocked-out tooth is likely to be?	Primary	881	45.20
	Permanent	844	43.30
	I don't know	224	11.50
Would you look for the lost tooth?	Yes	1266	64.96
	No	553	28.37
	I don't know	130	6.67
How would you handle the tooth?	By the root	357	18.32
	By the crown	852	43.71
	I don't think that is important	740	37.97
What will be your immediate action?	Rinse the tooth and put it back in its place and send the child to the dentist immediately	262	13.44

	Stop oral bleeding then put the child to rest	593	30.43
	Save the tooth and send the child to the dentist immediately	861	44.18
	I don't know	233	11.95
How would you rinse the tooth?	Tap water without rubbing	1056	54.18
	Water with soap and brush	187	9.59
	Antiseptic	164	8.41
	I don't know	542	27.80
What storage medium would you use?	Tap water	257	13.19
	Antiseptic solution	38	1.95
	Tissue paper	434	22.27
	Milk	352	18.06
	Normal saline	416	21.34
	Keep it dry	157	8.05
	I don't know	295	15.14
How urgent is it to seek emergency department?	Immediately	1019	52.29
	Within 60 minutes	190	9.75
	Within few hours	142	7.29
	It is not urgent	272	13.95
	I don't know	326	16.72

The characteristics of participants in relation to the level of knowledge on the immediate management of dental avulsion are presented in Table 4. A chi-square test has found no association between the level of knowledge and the marital status ($p=0.5525$) or occupation ($p=0.8304$). However, there is an association between the level of knowledge and gender ($p<0.0001$), age ($p<0.0001$), educational level ($p=0.0218$), number of children ($p<0.0001$), having previous information about dental injuries ($p<0.0001$), the source of previous information ($p=0.0295$), having experienced/witnessed dental trauma ($p=0.0038$) and being interested in further learning on the management of knocked-out teeth ($p<0.0001$). The age group between 20 to 29 years was the highest group with intermediate and advanced levels of knowledge. Having a bachelor's degree, more than three children, previous information in the management of dental injuries, experienced or witnessed dental trauma, and being very interested in learning about the management of knocked-out teeth positively affected the level of knowledge (figure 2 – 4).

Table 4 Characteristics of participants regarding the level of knowledge in dental avulsion management

Variable	Level of Knowledge			p value
	Low (n=390) N (20.01%)	Intermediate (n=1034) N (53.05%)	Advanced (n=525) N (26.94%)	
Gender				< 0.0001**
Male	92 (36.80%)	131(52.40%)	27 (10.80%)	
Female	433 (25.48%)	903(53.15%)	363 (21.37%)	

Age				< 0.0001**
20 to 29	195 (27.98%)	381(54.66%)	121 (17.36%)	
30 to 39	167 (32.74%)	248(48.63%)	95 (18.63%)	
40 to 49	125 (25.41%)	250(50.81%)	117 (23.78%)	
50 or above	38 (15.20%)	155 (62%)	57 (22.80%)	
Educational Level				0.0218*
Uneducated	9 (64.29 %)	5 (35.71%)	0 (0 %)	
Primary School	1 (10%)	7 (70%)	2 (20%)	
Intermediate School	18 (38.29%)	23 (48.94%)	6 (12.77%)	
High School	114 (27.94%)	221(54.17%)	73(17.89%)	
Bachelor Degree	324 (26.51%)	647(52.95%)	251 (20.54%)	
Higher Education	59 (23.79%)	131(52.82%)	58 (23.39 %)	
Marital Status				0.5525
Married	482 (26.64%)	958(52.96%)	369 (20.40%)	
Divorced	27 (31.76%)	45(52.94%)	13 (15.30%)	
Widow/widower	16 (29.09%)	31 (56.36%)	8 (14.55%)	
Number of Children				< 0.0001**
1	148 (32.10%)	234(50.76%)	79(17.14%)	
2	99 (24.38%)	236(58.13%)	71(17.49%)	
3	94 (31.23%)	165(54.82%)	42(13.95%)	
More than 3	184 (23.56%)	399(51.09%)	198(25.35%)	
Occupation				0.8304
Employed	301 (27.24%)	588(53.21%)	216(19.55%)	
Unemployed	224 (26.54%)	446(52.84%)	174(20.62)	
Previous Information about dental injuries?				< 0.0001**
Yes	337 (23.24%)	780(53.79%)	333(22.97%)	
No	188 (37.68%)	254(50.90%)	57(11.42%)	
Source of information				0.0295*
Internet	101(23.88%)	228(53.90%)	94(22.22%)	
Books	10(22.22%)	24(53.33%)	11(24.45%)	
Training courses	10(33.33%)	11(36.67%)	9(30%)	
Television	9(24.32%)	23(62.17%)	5(13.51%)	
Dentist/physician	129(20%)	371(57.52%)	145(22.48%)	
Friends	54(33.55%)	67(41.61%)	40(24.84%)	
Others	24(23.76%)	51(50.50%)	26(25.74%)	
Experienced or witnessed dental trauma?				0.0038**
Yes	426(27.73%)	827(53.85%)	283(18.42%)	
No	99(23.97%)	207(50.12%)	107(25.91%)	
Interested in learning about management of knocked-out teeth?				< 0.0001®
Very interested	273(21.28%)	724(56.43%)	286 (22.29%)	
Neutral	205(35.28%)	278(47.85%)	98 (16.87%)	
Not interested	47(55.29%)	32(37.65%)	6 (7.06%)	
** Significant at 1%, *Significant at 5%				

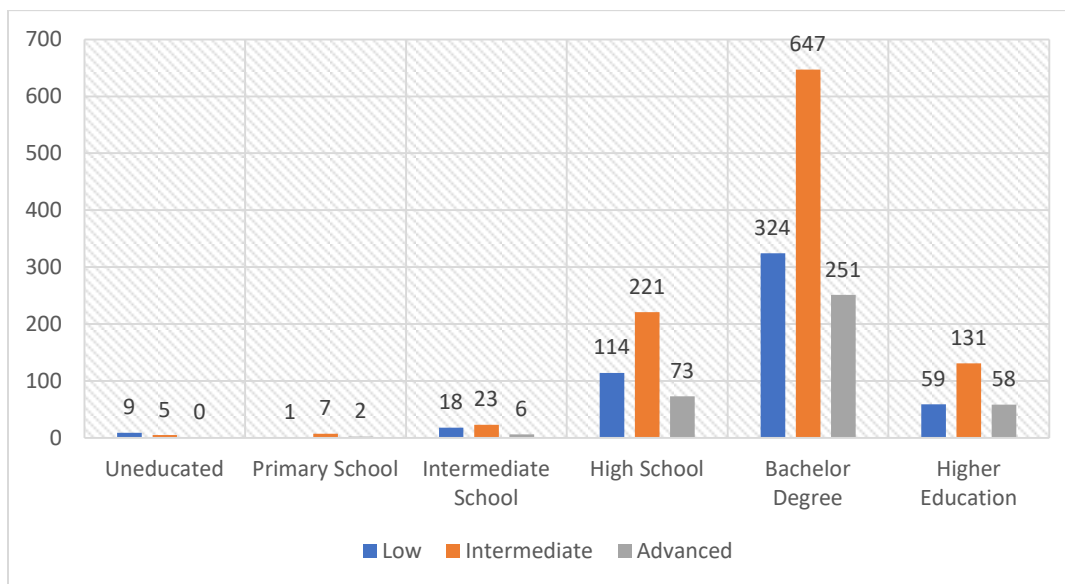


Figure 2 Level of knowledge and educational level

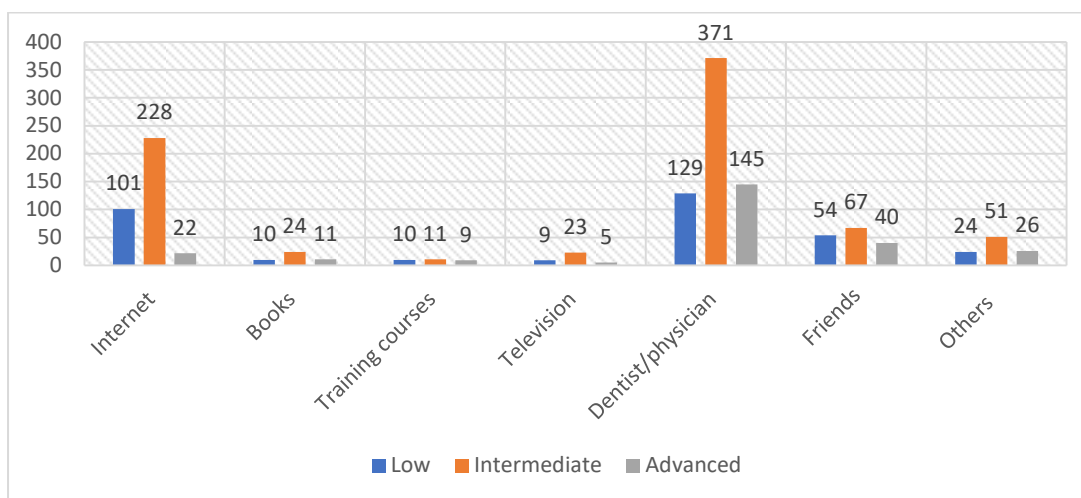


Figure 3 Level of knowledge and source information about dental avulsion

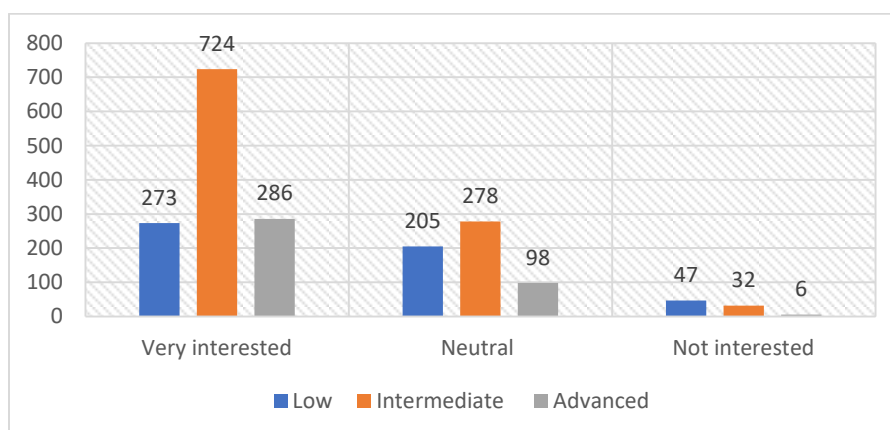


Figure 4 Level of knowledge and being interested in learning about management of knocked-out tooth

4. DISCUSSION

This study aimed to assess parents' knowledge in the management of dental avulsion in Riyadh, Saudi Arabia. Surprisingly, results showed that most of the parents (53.05%) have an intermediate level of knowledge. However, recent publications on parents that were conducted in several regions across Saudi Arabia reflected inadequate level of knowledge, with a smaller sample size in

comparison to this study. Meanwhile, other studies such as (Ali, 2016) and (Alsehibany et al., 2018) were particularly for mothers and concluded similar results. Moreover, most of the participants have a bachelor's degree, which coincides with this study. Most of the participants have had a previous experience regarding dental avulsion (78.81%) in contrast to (Al Ghamdi et al., 2016) (61%). Nevertheless, (Al Zahrani and Almaqboul, 2020) (68%), (Ahmed et al., 2020) (54.4%) and eastern province (45.6%), and (Alharbi et al., 2020) in the western province (71.5%) reported negatively to previous dental trauma incidents. The dentist/physician was the primary source of information about dental avulsion in all the studies that indicates some level of parents' awareness in seeking accurate management. Therefore, emphasis should be implemented on the role of healthcare providers to educate the public. Immediate action might significantly impact the avulsed tooth prognosis, yet all these regions did not consider replanting the tooth. In this study, only 13.44% would rinse the tooth and return it to the socket, while the majority (44.18%) would save it and go to the dentist immediately.

Moreover, (Ali, 2016) (11.7%) and (Alsehibany et al., 2018) (11.5%) concluded that mothers would attempt replanting the avulsed tooth and in the same studies (8.3%), (41.6%), respectively, would save the tooth and go to the dentist. Timing to seek care is another determinant factor in the prognosis. However, different results were reached in each region. For instance, with (Ali, 2016; Alsehibany et al., 2018; Alharbi et al., 2020) participants would seek care immediately, which concurs with this study results, while the majority in (Al Ghamdi et al., 2016) did not know the optimal timing. Furthermore, in (Al Zahrani and Almaqboul, 2020) participants have considered seeking treatment on the same day, but in (Ahmed et al., 2020) it was within 20 minutes. Like emergency timing, transporting medium revealed significant results. Most parents in this study chose tissue paper, while (Alsehibany et al., 2018) would use saline (Al Zahrani and Almaqboul, 2020) and (Alghamdi et al., 2016) parents did not know the appropriate storage medium.

Most parents in (Ahmed et al., 2020) were not considering any medium at all. This variation is alarming, so parents' guidance regarding timing and the appropriate storage medium is critical to improve the prognosis and prevent further complications. The conclusion of the study shows that there is an association between the level of knowledge and various variables and vary in other studies. Firstly, (Al Zahrani and Almaqboul, 2020; Alsehibany et al., 2018; Ahmed et al., 2020) has found that age was not significant in their studies. Secondly, educational level and gender were insignificant variables in (Ali, 2016; Al Zahrani and Almaqboul, 2020) studies. Furthermore, the number of children were found to be significant in (Alharbi et al., 2020) study.

5. CONCLUSION

Dental avulsion is one of the most critical traumatic dental injuries, which has not been sufficiently studied in Riyadh city. Most parents who participated in this study portrayed an intermediate level of knowledge of dental trauma. Nevertheless, certain aspects in the initial management reflect a great misconception, which significantly affects the prognosis. Certain limitations encountered in this study, being an online questionnaire distributed through social media platforms, there might be some elements of bias or underreporting in the study. A cross-sectional study design studies the population at a certain point in time, which is not guaranteed to be representative. According to the results of this study, having previous information in dental trauma management and the source of that information played a significant role in improving parents' knowledge. Nevertheless, co-founding factors were not controlled, which hinder establishing cause and effect relations. To conclude, the distribution of leaflets and audiovisual videos should be used to improve knowledge and awareness.

Acknowledgement

We thank the participants who were all contributed samples to the study.

Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study.

Ethical approval

The study was approved by the Medical Ethics Committee of King Saud bin Abdulaziz University for health and sciences. Ethical Approval Code: (SP20/438/R).

Conflicts of interest

The authors declare that they have no conflict of interest.

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Data and materials availability

All data associated with this study are present in the paper.

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